Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

181 "Find the volume between $x = 0$ and $x = 2l$ of the solid bounded by the surface whose equation is

$$a(y^4+z^4) - z^2(y^3-2ay^2+2e^3) - y^2(bx^2+c^2x+e^3) = 0."$$

SOLUTION BY E. B. SEITZ.

Let $y = r\sin\theta$ and $z = r\cos\theta$. Then the equation becomes

$$ar^2 = (x^3+2e^3)\cos^2\theta+(bx^2+c^2x+e^3)\sin^2\theta,$$

and

$$V = \int\int\int rdrd\theta dx.$$

The limits of r are 0 and $\{\,[(x^3+2e^3)\cos^2\theta+(bx^2+c^2x+e^3)\sin^2\theta]\div a\,\}^{\frac{1}{2}} = u$; of θ, 0 and 2π; and of x, 0 and $2l$.

$$\therefore\ V = \int_0^{2l}\int_0^{2\pi}\int_0^{u} rdrd\theta dx = \frac{1}{4a}\int_0^{2l}\int_0^{2\pi}\Big[x^3+bx^2+c^2x+3e^3+ (x^3-bx^2-c^2x+e^3)\cos 2\theta\Big]d\theta\, dx$$

$$= \frac{\pi}{2a}\int_0^{2l}(x^3+bx^2+c^2x+3e^3)dx = \frac{\pi l}{3a}\Big(6l^3+4bl^2+3c^2l+9e^3\Big).$$

NOTE BY THE EDITOR. — IN the *Note on Attraction*, at page 181, we modified Mr. Adcock's language, supposing that we had retained his ideas (except in one particular, which was thought to be a mistake), and sent him a copy of the "proof" for his approval or rejection. But, unfortunately, the proof was not returned until after the sheet was printed. Therefore, as Mr. Adcock does not accept the modification, we subjoin his note, *verbatim.*

"*Ultimate Proposition in Attraction.* — If the points of every particle of matter attract the points of every other particle of matter, then the resultant attraction between any two particles, whose dimensions are infinitely small in comparison with the distance between them, will be directly as the product of their masses and inversely as the square of the distance between them.

"That it is as the product of the masses results from the consideration that if the densities be increased or diminished in any ratio the number of attracting points or forces is increased or diminished in the same ratio without affecting the directions.

"That it is in the inverse ratio of the square of the distance follows, first, from the fact that any two points, of matter of the same density, attract each other with a constant force for all distances because the point of application of a force may be anywhere on its line of direction, distance being a quantity of a different kind has no effect on force; second, each point of each particle being a centre of attraction for all other points of all particles, the number of these equal forces applied between two particles, is directly as the product of their masses and inversely as the square of the distance between them, as a necessary consequence of their situation.

R. J. Adcock."

We embrace this opportunity to say, that we do not reject papers submitted for publication by mathematicians of acknowledged ability simply because we dissent from the conclusions arrived at, or the logic employed, nor do we always signify our dissent, as it is assumed that a majority of our readers are quite as competent to decide the matter as we are.

In relation to the above note by Mr. Adcock, we have to say, that we do not understand what is meant by the points of a particle infinitely small, nor do we understand how the density of a particle infinitely small can be increased or diminished. And that the attraction between masses is as the *sum* of the masses and *not* as their *product* we supposed to be a universally admitted fact.

PROBLEMS.

182. (Selected) By R. M. De France, Esq.—If $\tan\theta + \sin\theta = m$ and $\tan\theta - \sin\theta = n$, show that $m^2 - n^2 = 4\sqrt{(mn)}$.

183. (Selected) By Prof. Eddy.— Show that the altitude of the greatest equilateral triangle that can be circumscribed about a given triangle, is $\sqrt{[a^2+b^2-2ab\cos(\frac{1}{3}\pi+C)]}$.

184. By O. H. Merrill.—In cutting the maximum rectangular parallelopipedon from a frustrum of a cone, five pieces are cut off. Find the volume of each of these pieces.

185. By Prof. J. J. Skinner, New Haven, Conn. — Let the equation $ay^2+bxy+cx^2+dy+ex+f=0$ represent a parabola referred to rectangular axes. Prove that the latus rectum $=(bd-2ac)\div[(a+c)\sqrt{(4a^2+b^2)}]$.

186. By Prof. Johnson.—A_1, A_2; B_1, B_2 and C_1, C_2 are three pairs of points in a plane such that the three lines A_1A_2, B_1B_2, C_1C_2 meet in a common point O. Let B_1C_1 and B_2C_2 meet in a, and determine in like manner the points b and c. Prove that a, b and c are in a straight line.

Note. We have thus 10 points situated 3 by 3 on 10 lines, each point being the intersection of 3 lines, so that for each point there are three pairs of points colinear with it, and three points not joined to it in the figure but colinear with each other. Devise a notation which shall express the mutual relation of these points and lines.